R E M A R K S

The last Official Action (Paper dated July 9, 1996) has been carefully considered.

Applicants have decided to proceed in accordance with the provisions of 37 C.F.R. 1.129 (the present application relies on a priority date (October 12, 1992) which is more than two years prior to June 8, 1995). The prescribed fee is enclosed.

In finally rejecting the independent claims 1 and 70, the Primary Examiner relied on the disclosure of the Japanese patent No. 54-145860 to Toyota. It is believed that, prior to proceeding with the discussion of those features which distinguish the matter of applicants' independent claims 1 and 70 from the teaching of Toyota (under 35 U.S.C. 102 and/or under 35 U.S.C. 103), it is proper to analyze the disclosure of Toyota because this, applicants submit, is likely to resolve the majority of issues which are raised in the Final Action of July 9, 1996. Applicants have obtained a translation of the Toyota reference, and a copy of such translation is enclosed for the Primary Examiner's convenience. Applicants further enclose Appendices A1 and A2 which respectively show the structure of Figure 1 in Toyota when the bypass clutch including the piston 15 is engaged and disengaged.

The flow of power (indicated by heavy phantom lines)

between the turbine or runner or rotor (hereinafter turbine) 10 and the driven device (transmission input shaft) 13 of Toyota invariably takes place only and alone by way of the turbine disk or flange 12 (this flange is riveted to the turbine 10 and is splined (at 14) to the driven device 13). The connection including the parts 10, rivets, flange 12 and splines 14 establishes the unchanging (downstream) portion of the path for the transmission of torque from the driving device 1 to the driven device 13 in the apparatus of Toyota. The upstream portion of such path can vary, dependending upon whether the bypass clutch is engaged (Appendix A1) or disengaged (Appendix A2).

When the bypass clutch of Toyota is engaged, torque is being transmitted to the turbine 10 by way of the housing wall 6, piston 15, and energy storing means 25 (Appendix A1). When the bypass clutch of Toyota is disengaged (Appendix A2), the turbine 10 receives torque from the driving device 1 via housing 5, pump 8 of the torque converter 7, and stator 11 of the torque converter.

Appendix B1 shows that, when the bypass clutch 118 in the apparatus 101 which is shown in applicants' Figures 2 and 3 is engaged, the path of the torque flow from the output device (i.e., from the radial wall 112 of the housing 102) to the input device (i.e., to the hub 114) does <u>not</u> include a portion extending through the turbine 113 (please

compare this with the Appendix A1) because such path extends from the wall 112, through the bypass clutch 118, flange-like member 134 of damper 116, and hub 114.

When the bypass clutch 118 of applicants' Figures 2 and 3 is disengaged (please refer to the Appendix B2), the flow of torque is through the turbine 113; however, not from the turbine 113 to the hub 114 but rather from the turbine 113 to the damper 116 and thence to the hub 114.

A comparison of the operation of the apparatus of Toyota (Appendices A1 and A2) with that of the apparatus shown in applicants' Figures 2 and 3 indicates that the damper of Toyota is put to use only when the bypass clutch is engaged (Appendix A1); on the other hand, the damper 116 in applicants' apparatus 101 is effective when the bypass clutch 118 is engaged (Appendix B1) as well as when the bypass clutch 118 is disengaged (Appendix B2).

The situation is clearly analogous when one compares the construction and mode of operation of the Toyota apparatus (Appendices A1 and A2) with the construction and mode of operation of the apparatus 1 which is shown in applicants' Figure 1. The enclosed Appendix C1 shows the path of the flow of torque from the driving device OD to the input device ID when the bypass clutch 18 is engaged; the turbine 13 is bypassed because the transmission of torque takes place

from the wall 12, through the bypass clutch 18, through the damper 16, and through the hub 14. When the bypass clutch 18 is disengaged (please refer to the enclosed Appendix C2), the flow of torque is from the housing 2, through the pump 10 and stator 15, through the turbine 13, through the fastener 17 and carrier 23, through the damper 16, and through the hub 14. Thus, the flow of torque through the damper 16 takes place regardless of whether or not the bypass clutch is engaged, the flow of torque through the turbine 13 takes place only when the bypass clutch is disengaged, and the flow of torque never takes place from the turbine 13 to the hub 14 (all this is evidently in contrast with the construction and mode of operation of the Toyota apparatus as shown in the Appendices A1 and A2).

Applicants' twice amended claim 1 does not recite the bypass clutch 18 or 118, i.e., one can disregard the Appendix A1 which shows the bypass clutch (including the piston 15) of Toyota in the engaged condition. All that is necessary is to ascertain whether or not the twice amended claim 1 of the present application patentably distinguishes over the apparatus of Toyota when the bypass clutch in the Toyota apparatus is open or disengaged (i.e., ineffective); at such time, no damping of torque takes place between the output shaft 1 of the engine and the input shaft 13 of the transmission because the energy storing means 25 of the

Toyota apparatus is not in use (please refer to the Appendix A2).

On the other hand, applicants' claim 1 recites power transmitting means (such as 19 or 119) forming part of a damper 16 or 116 which is effective (active) regardless of whether the bypass clutch 18 or 118 is engaged or disengaged (i.e., regardless of whether or not applicants' apparatus 1 or 101 employs a bypass clutch). The twice amended claim 1 of the present application specifically points out (in lines 11 to 15) that the power transmitting means 19 or 119 comprises at least one energy storing element (such as 20 or 21 shown in FIG. 1 or 119 shown in FIGS. 2 and 3) which is active in the power flow between the at least one runner (turbine) 13 or 113 and the driven device (14, ID or 114). The energy storing element or elements 25 forming part of the damper in the apparatus of Toyota are not installed in the power train between the turbine or runner 10 and the output device 13; the energy storing means 25 of Toyota can transmit torque <u>to</u> the turbine 10 when the bypass clutch of Toyota is engaged; however, such energy storing means 25 cannot (under any circumstances) transmit torque <u>from</u> the turbine 10 to the input shaft 13 of the transmission because such energy storing means is installed <u>upstream</u> of the turbine irrespective of whether or not the apparatus of Toyota is operated with the bypass clutch engaged and

whether or not the apparatus of Toyota employs a bypass clutch (emphasis by the undersigned).

The advantages of the power transmitting apparatus which is recited in applicants' twice amended claim 1 over the apparatus of Toyota are believed to be important and utterly unobvious. The apparatus of Toyota must rely on the turbine 10 during each and every stage and during each and every mode of operation; this is plainly not the case when one employs applicants' apparatus 1 or 101 (please refer to the Appendices B1 and C1). Secondly, and at least as important: applicants' damper 16 or 116 is effective irrespective or whether the bypass clutch 18 or 118 is engaged or disengaged (i.e., regardless of whether or not applicants' apparatus 1 or 101 employs a bypass clutch). On the other hand, the damper including the spring or springs 25 of Toyota is effective only when the bypass clutch including the piston 15 is engaged (Appendix A1) but is not in use when the bypass clutch including the piston 15 of Toyota is disengaged (i.e., when the bypass clutch including the piston 15 of Toyota is presumed to have been omitted so that the patented apparatus operates in a manner as shown in the Appendix A2).

Of course, the differences are even more pronounced when the teaching of Toyota is compared with the matter of applicants' amended claim 25; this claim calls for the

bypass clutch (such as 18 or 118) and specifically recites that the at least one energy storing element (such as 20 or 21 in FIG. 1 or 119 in FIGS. 2-3 of applicants' drawings) is operative to transmit torque between the at least one turbine or runner (13 or 113) and the driven device (such as 14, ID or 114) in the disengaged condition of the bypass clutch (please compare this with the structure depicted in the attached Appendix A2 which shows that the spring or springs 25 do not participate in the transmission of torque when the bypass clutch including the piston 15 of Toyota is disengaged).

The amended claim 70 is believed to patentably distinguish over the teaching of Toyota for reasons which are pointed out in the preceding paragraph of these Remarks (please refer to lines 28-30 of the claim 70) as well as for numerous additional reasons at least some of which will be discussed below.

Applicants believe that, in view of the aforediscussed important structural and functional differences between the matter of applicants' finally rejected independent claims 1, 70 and the apparatus of Toyota, the patentability of the claims which refer to the claim 1 need not be discussed at this time. However, applicants do believe that it is important to point out that, in their opinion, the inclusion of the claim 25 (in the second paragraph on page 5 of the Final

Action dated July 9, 1996) among those being rejected under 35 U.S.C. 103 as being unpatentable over the combined teachings of Toyota and US patent No. 5,377,796 to Friedmann et al. warrants careful reconsideration because the Friedmann et al. reference does not disclose that feature (already discussed hereinbefore) which is recited in the claim 25 but is utterly lacking in the apparatus of Toyota.

Applicants will now discuss some of those passages in the Final Action dated July 9, 1996 which discuss the teaching of the Toyota reference and which, applicants believe, might warrant at least some reconsideration in view of the enclosed translation of the Japanese patent and in view of the matter shown in the attached Appendices A1 and A2 as well as in the Appendices B1, B2 and C1, C2.

In her interpretation of the Toyota reference (page 3, lines 1-3), the Primary Examiner observed that the "carrier (hub) 26 [is] connected to the runner 10 by a weld for rotating therewith [and] contains stressing means 27, 28". This observation is believed to warrant reconsideration because the hub 26 shown in Figures 1, 3, 4 and 5 of Toyota does not (and cannot and should not) contain the annular plates 27, 28 if the damper of Toyota is to operate properly. The hub 24 is the output member of the Toyota damper, the springs 25 (in the windows 24 of the hub 26) are the energy storing elements of such damper, and the annular plates 27, 28 are the

input member of the Toyota damper. The plate 27 has hole or holes 29 for the spring or springs 25. The just described damper of Toyota can operate properly only and alone if the plates 27, 28 can turn relative to the hub 26 and/or vice versa, and if such angular displacement eintails a stressing of the spring or springs 25 or permits the spring or springs 25 to dissipate energy. In other words, the hub 26 in the apparatus of Toyota cannot "contain" the stressing means.

The last sentence in the penultimate paragraph on page 6 of the Final Action also deals with the relationship between the hub 26 and the members (annular plates) 27, 28 in the apparatus of Toyota. The Primary Examiner relies on the pin 31 (best shown in FIGS. 2, 3 and 5 of Toyota) as a means for connecting the plates 27, 28 to the hub or carrier 26. The fact is that the pin 31 serves as a means for preventing excessive stressing of the spring or springs 25. Thus, the pin (rivet) 31 which is shown in FIG. 2 of Toyota can permit an angular movement between the hub 26 on the one hand and the plates 27, 28 on the other hand to an extent determined by the circumferential length of the "rivet hole" 30 provided in the hub 26. One head of the rivet 31 is anchored in the annular plate 28, and the shank of this rivet is snugly received in a hole of the plate 27 (please refer to Figure 5 in Toyota). The rivet

hole 30 of the hub 26 receives the shank of the rivet 31 in the space between the plates 27 and 28 (please refer again to Figure 5 in the Toyota reference). Again, the pin or rivet 31 of Toyota can satisfy its stated purpose (of limiting the extent of angular movability of the hub 26 and plates 27, 28 relative to each other to an extent which enables the spring or springs 25 to store or dissipate energy but prevents an overstressing of the spring or springs 25) only and alone if the hub 26 is not rigid with the plates 27, 28, i.e., if the parts 26 and 27, 28 respectively constitute the (relatively movable) output and input members of the damper in the apparatus of Toyota.

In rejecting the claims 9 and 10 under 35 U.S.C. 103 as being directed to matter which is obvious in view of the disclosure in the Japanese reference, the Primary Examiner overlooked that the coil spring 25 shown in Fig. 2 of Toyota is very short (it appears to extend along an angle of perhaps 30°); therefore, the gradient of such spring 25 cannot be as low as recited in applicants' claims 9 and 10. Please refer in this connection to the disclosure in the first full paragraph on page 25 of applicants' specification.

Still further, applicants believe that the arguments in the last full paragraph on page 7 and in the paragraph bridging the pages 7-8 of the Final Action warrant rather

extensive reconsideration. Several reasons for such belief will be readily appreciated upon perusal of several preceding passages of these Remarks.

In the paragraph bridging the pages 7-8 of the Final Action, there appears the statement that "It appears that applicants are relying on the structure and function of Figure 4 in their present application". This is not so; please refer to the enclosed Appendices B1, B2 (showing the structure of applicants' Figure 2) and to the enclosed Appendices C1, C2 (showing the structure in applicants' Figure 1). As applicants see it, the purpose of a properly engaged bypass clutch is to do what its name demands, namely to bypass the torque converter. Since the turbine 13 or 113 forms part of the torque converter, it does not transmit torque to the hub 14 or 114 when the bypass clutch 18 or 118 is properly engaged. At the same time, the construction of applicants' apparatus 1 and 101 is such that the transmission of torque from the bypass clutch 18 or 118 must take place by way of the damper 16 or 116. Still further, and since applicants' apparatus 1 or 101 does not exhibit a direct positive connection between the turbine 13 or 113 and the hub 14 or 114, the transmission of torque from the prime mover (OD) to the input shaft ID of the transmission invariably takes place by way of the damper 16 or 116, i.e., by way of the energy storing means 19 or 119. This is not

only disclosed in the original specification (please refer, for example, to the Abstract on page 74) but is also shown in the drawings and is recited in at least some of the original claims (please refer, for example, to the original claim 48). Thus, neither the Appendices B1, B2 or C1, C2 nor the claims 1 and 70 recite any matter which is not fully disclosed and shown in the original specification. Accordingly, in arguing in support of their claims 1 and 70 which were finally rejected in the last Action, applicants did not rely on the structure and function of Figure 4 in their present application.

With reference to applicants' Figures 2 and 3, the operation of the apparatus 101 is such that, when the bypass clutch 118 is engaged, there is no transmission of torque between the energy storing means 119 and the turbine 113. In order to transmit torque, the turbine 113 must encounter and overcome at least some resistance to rotation; this does not and cannot happen when the bypass clutch 118 is engaged because the transmission of torque from the housing 102 to the hub 114 then takes place in such a way that the torque converter including the turbine 113 is bypassed. Moreover, and as already discussed hereinbefore, the turbine 113 is not designed and/or mounted to positively drive the hub 114; such transmission of torque can take place only from the pump 110 and stator 115 to the turbine 113, thence

to the damper 116, and from the damper 116 to the hub 114. It is correct that the turbine 113 shares the rotary movements of carrier 123 via welded seam 142, also when the bypass clutch 118 is engaged; however, the turbine 113 does not transmit torque to the damper 116 and/or to the hub 114.

The statement in lines 2-4 on page 8 of the Final Action appears to be based on a slight misunderstanding of applicants' invention, and more specifically of the construction and mode of operation of the apparatus 101 which is shown in Figures 2 and 3 of applicants' drawings. Thus, such passage contains the statement that "Member 140 only 'limits' the angular movement of tunner 113, the runner is nor (probably meaning 'not') completely rotatable with respect to member 140". Please refer to the paragraph bridging the pages 36-37 of applicants' specification; this passage explains that the part 140 limits the movements of the runner 113 "in at least one of the two directions indicated by the axis of the housing 102". Thus, there is no mention of any limitation of angular movement of the runner 113 on the part of the member 140. Of course, if the Primary Examiner intended to state that some (emphasis by the undersigned) forces which tend to force the runner 113 to rotate with the member 140 will be generated as long or as soon as the runner 113 is in (any, even so slight) contact with the member 140, applicants evidently accept the correctness

of such observation; however, it would appear that this has no bearing upon the relevancy of the Toyota reference as far as the patentability of applicants' claims (under 35 U.S.C. 102 and/or under 35 U.S.C. 103) is concerned.

The same observations are believed to apply for the comments in lines 4-8 on page 8 of the Final Action. As already discussed hereinabove, the very name of a bypass clutch indicates (or at least very strongly implies) that the torque converter is bypassed (as far as the transmission of torque is concerned) when the bypass clutch is fully engaged; after all, under such circumstances the bypass clutch establishes a direct and positive torque transmitting connection between the housing (i.e., between the output device of the prime mover) and the output member (input shaft of the transmission) of the apparatus which employs a torque converter with a built-in bypass clutch. However, this is believed to have no bearing upon the patentability of the finally rejected claims 1 and 70 (and of the claims which refer to the finally rejected claim 1) over the teaching of the Toyota reference. The reasons why applicants believe that their claims patentably distingush over the teaching of Toyota are disclosed in the Remarks of the amendment dated April 12, 1996 and in the preceding passages of these Remarks.

One of the features which distinguish applicants'

contribution from the teaching of Toyota is pointed out by the Primary Examiner in the second paragraph on page 8 of the Final Action. Applicants have duly noted the observations in the next-following paragraph on page 8 where the Primary Examiner expresses the view that the situation is analogous or identical when the apparatus of Toyota is being put to use. Applicants respectfully disagree for the following reasons:

As can be seen in the enclosed Appendix A2, a disengagement of the bypass clutch (including the piston 15) in the Toyota apparatus entails that the flow of torque takes place from the engine output shaft 1 to the housing 5, thence to the pump 8 and stator 11, turbine or runner 10, the non-referenced rivet or rivets between the turbine 10 and the turbine disc 12, the splines 14, and on to the input shaft 13 of the transmission. At such time, the turbine 10 of Toyota does not and need not cause the spring or springs 25 to store energy because such spring or springs does not or do not have any influence upon the transmission of torque from the shaft 1 to the shaft 13. This is believed to be axiomatic. The only torque transmitting connection between the shafts 1 and 13 in the apparatus of Toyota is by way of the turbine 10 because only the turbine 10 is positively connected to the shaft 13 (by way of the non-referenced rivet or rivets, disc 12 and spline(s) 14). The spring or springs 25 of the damper

become effective only and alone when the bypass clutch of Toyota is engaged (please refer again to the Appendix A1) because, at such time, the flow of torque is from the spring or springs 25 to (emphasis again by the undersigned) the turbine 10 and thence (via rivet(s), disc 12 and spline(s) 14) to the shaft 13 of the transmission. On the other hand, when the bypass clutch 118 in applicants' apparatus 101 (please refer to the appendix B1) is engaged, the turbine 113 is bypassed in its entirety; this is possible because the turbine 113 is not positively connected (for rotation) with the hub 114 and with the transmission shaft which receives torque from the hub 114 of applicants' apparatus 101.

Applicants believe that the observations in the last paragraph on page 8 and in the first paragraph on page 9 of the Final Action are not to the point and/or erroneous. The second paragraph on page 5 of the enclosed translation of the Toyota reference states that the oil seal 16 directly couples the hub 21 with the piston 15 of the bypass clutch. The second paragraph on page 6 of the enclosed translation contains the statement that the piston 15 is "carried on the output shaft 13 through the hub 21". Evidently, this is intended to indicate that the hub 21 performs upon the piston 15 a centering action relative to the shaft 13 but certainly not a torque transmitting action (emphasis by the undersigned). Please note that, if the hub 21 in the

apparatus of Toyota were to establish a torque transmitting connection between the piston 15 and the shaft 13, the damper including the spring or springs 25 of Toyota would become superfluous because it would remain inactive when the bypass clutch including the piston 15 of Toyota is engaged as well as when the bypass clutch of Toyota is disengaged (please refer to the Appendix A2).

In response to the Primary Examiner's observations in the second and third paragraphs on page 9 of the Final Action, applicants respectfully draw attention to the decision by the CA FC (i.e., by the successor of CCPA, the author of the decision in In re Aller on which the Primary Examiner relies) in Panduit Corporation v. Dennison Manufacturing Co. (227 USPQ 337 wherein it was held as follows:

> "Federal district court erred, in determining obviousness, by relying upon 'general engineering principles and general principles of physics and, indeed, the common experience of mankind,' since such reliance is in conflict with patent statute and with patent examining system, since it raises standard impossible for any patent to meet, and since 'principles' and 'experience' referred to were those taught to court by inventor of patented device."

It is believed that this rather recent decision clearly contradicts the decision by the CCPA in In re Aller.

The filing of the enclosed verified English translation is believed to satisfy the requirements and conditions

expressed in the last paragraph on page 9 of the Final Action.

In reply to the objection to the specification in the second paragraph on page 2 of the Final Action dated July 9, 1996, applicants enclose a copy of British Patent Specification No. 679,512 which claimed the priority of a United States patent application filed May 10, 1949 (emphasis by the undersigned). Thus, as early as in 1949, it was customary to employ the term "Föttinger torque converter" (or coupling) in a United States patent application. Please refer to lines 11-12 on page 1, to lines 35-36 on page 2, and to lines 5-6 of claim 1 in the British reference.

Applicants further respectfully draw attention to the enclosed print of page 367 in DICTIONARY OF ENGINEERING AND TECHNOLOGY, VOLUME I, by Dr.-Ing. Richard Ernst (5th Edition, 1989) which, in the opinion of the undersigned, is by far the most respected, reliable and comprehensible German-English Technical Dictionary (2 cover pages are also enclosed). Page 367 refers to "Föttinger speed transformer", to "Föttinger coupling o. transmitter", and to "Föttinger torque converter".

Since the British Patent Specification No. 679,512 refers to a "Lysholm type torque converter" as an apparent equivalent of a Föttinger torque cönverter, applicants further enclose a print of the page 644 from the Dictionary by Dr.-Ing. Ernst which refers to a "Lysholm-Smith" torque

converter.

If the Primary Examiner considers it advisable, necessary and/or acceptable, applicants will be pleased to insert in their specification a sentence or two specifically referring to the British Patent Specification No. 679,512 and/or to the Dictionary by Dr.-Ing. Ernst. For example, such insertion could be a paragraph to be introduced between the lines 27 and 28 on page 7 of the original specification and could read substantially as follows:

-- A Föttinger coupling is discussed, for example, in British Patent Spefication No. 679,512, and is referred to on page 367 of the Fifth Edition of Volume I of DICTIONARY OF ENGINEERING AND TECHNOLOGY by Dr.-Ing. Richard Ernst.--.

Alternatively, applicants propose to replace the definition "Föttinger coupling" with --hydrodynamic clutch--.

The Primary Examiner is herewith respectfully requested to make the above proposed entry or change by an Examiner's Amendment if she will reach the conclusion that the present application is otherwise in condition for allowance.

This Paper is believed to place the present case in condition for allowance, and such disposition at a reasonably early date is earnestly solicited.

If the Primary Examiner believes that a conference, either per telephone or at the United States Patent and Trademark Office, is advisable or necessary, applicants

respectfully request that the Primary Examiner contact Henry Sternberg, Esq. at DARBY & DARBY, P.C. (telephone 212 527 7755) in order to arrange for a conference at a time which will be acceptable to the Primary Examiner.

Respectfully submitted,

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Encls.:

Petition with fee
First Submission fee
Literal translation of
Japanese patent No. 54-145860
Appendices A1,A2,B1,B2,C1,C2
Pages (4) from DICTIONARY by
Dr.-Ing. Ernst